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Page 1 of 2

INTERNATIONAL APPLICATION

PCT/AU98/00502

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

701 PENNSYLVANIA AVENUE, N.W. SUITE 600 WASHINGTON, DC 20004

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8697-001-27 PCT

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REGISTRATION NUMBER

30 DECEMBER 1999

DATE

FOR:

1999, 12-29 LONG ALDRIDGE & NORMAN LLP

APPLICANT OR PATENTEE: Stephinisternes DAVIS

SERIAL OR PATENT NO .: FILED OR ISSUED: STEP APPARATUS

New PCT National Stage Application ATTORNEY DOCKET NO.: 8697-001-27 PCT

Verified Statement (Declaration) Claiming Small Entity Status (37 CFR \$1.9(f) and \$1.27(b)) - INDEPENDENT INVENTOR

| As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR §1.9(a) for purpose section 41(a) and (b) of Table 35, United States Gode, to the Patent and Trademark Office with regard to the invention entitled: | es of paying reduced form unde |
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STEP APPARATUS DESCRIBED IN THE SPECIFICATION FILED filed as INTERNATIONAL APPLICATION NO. PCT/AU98/00502 on JUNE 30, 1998. DAPPLICATION SERIAL NO .: , FILED:

II PATENT NO , ISSUED: There not assigned, greated, conveyed or liceased and an under so obligation under contract or law to assign, given, convey or licease, may rights in the invention to may extrant who could not be classified as an independent investor under 37 CRF 31.400 it that person had used the invention, or to any content which would not qualify as a small business consistent under 37 CRF 31.500 or a competing organization under 37 CRF 31.500. nade the invention, or to any concern which would

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| NAME OF INVENTOR: | Stephen James DAVIS | | |
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| NAME OF INVENTOR: | | | 1 |
| SIGNATURE: | | DATE: | |
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STEP APPARATUS

This invention relates to step apparatus.

This invention has particular but not exclusive application for step apparatus to allow easier access to the 5 rear of tray back utility vehicles and for illustrative purposes reference will be made to such application. However, it is to be understood that this invention can be used in other applications such as providing steps on the rear of vehicles generally.

In the use of utility vehicles, it is common that the operator must stand on the bumper bar or towing hitch in order to reach into the trayback. The towing hitch is, with hitch ball installed, a curved surface, often greasy, which is not a safe support for standing. Where the ball is removed, the 15 hitch is of limited dimension, may also be greasy and generally does not form a safe step.

The present invention aims to alleviate at least one of the foregoing disadvantages and to provide step apparatus which will be reliable and efficient in use.

20 With the foregoing and other objects in view, this invention in one aspect resides broadly in step apparatus including:

a mounting portion adapted to engage a vehicle in the region of the towing hitch; and

a step portion supported on said mounting portion.

The mounting portion may take any suitable form dictated by the form of towing hitch and its environs on the vehicle. Preferably, the mounting portion is secured to the vehicle by

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the hitch assembly or a portion thereof, whereby the step apparatus may be affixed to existing vehicles. Alternatively, the mounting portion may be formed integrally with the vehicle or hitch assembly.

The mounting portion may comprise a metal or reinforced plastic mounting member or complementary section to the tubular box section Hayman Reece hitch mount provided on heavier utilities and four wheel drive vehicles, as well as some sedans. Alternatively, the mounting portion may comprise a 10 body member having a threaded stud adapted to engage the hitch ball aperture in a conventional gooseneck. In a yet further embodiment of the invention, the mounting means may comprise a body member adapted to engage the hitch ball of the towing hitch.

In a yet further embodiment of the invention, the mounting means may be adapted to secure to the ultimate mounting point of any of the aforementioned hitching arrangements. For example, some hitched comprise a bolted up arrangement at the rear of the vehicle. In these cases, the mounting means may 20 comprise a mounting flange adapted to be bolted through as the hitch assembly is itself mounted.

In the case of the complementary portion adapted to engage the heavy duty towing hitch mount of a utility or four wheel drive, the complementary portion is preferably provided with a 25 transverse aperture or tube adapted to register with the locking pin holes in the vehicle hitch mount whereupon the body member may be locked into engagement therewith with the standard pin otherwise used to engage the removable towing

hitch.

In the case of the apparatus adapted to engage the hitch ball, the body portion may comprise a socket or the like adapted to pass over the towing hitch ball, preferably sextending down to bear squarely on the gooseneck. The socket is preferably associated with interengagement means adapted to secure the socket on the hitch ball. The lower end of the body portion may be adapted to pass down the sides of the gooseneck whereupon the apparatus may be locked in position beneath the

The step portion may be integrally formed with the mounting portion or may be separable therefrom. For example, the step portion may be integrally formed of moulded plastics with the mounting portion. Alternatively, the step portion may be bolted to the mounting portion, or in the case of metal assemblies may be welded thereto. As a yet further alternative, the step portion and mounting portion may be integrally cast or moulded in metal or plastic.

The step portion may comprise a closed step surface.

20 Alternatively, the step portion may comprise an open grate or the like, in order to reduce the likelihood of slippage due to mud.

The mounting means may be secured to the vehicle or hitch assembly and support the step portion in a position which

25 renders the hitch assembly inoperable. For example, the step portion may be selectively secured to the mounting portion, whereby in use the step portion prevents attachment or detachment of a hitched towable vehicle. The selective

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securing of the step portion to the mounting portion may be by any suitable means providing the requisite security, such as securing means lockable by padlock.

The step portion may be mounted to the mounting portion in

5 a manner permitting the step to be moved from an in-use
position to a stowed position. For example, the step portion
may be hinged to the mounting portion whereby the step portion
may be moved from an in use position where the step is disposed
above the vehicle hitch to a stowed position whereby the hitch

10 may be undone. In addition, or in the alternative, the step
portion may be removable from the mounting portion when not in
use.

In order that this invention may be more readily
understood and put into practical effect, reference will now be

15 made to the accompanying drawings which illustrate a preferred
embodiment of the invention and wherein:

Fig 1 is an exploded view of a first embodiment of the present invention;

Fig 2 is an exploded view of alternate apparatus in accordance with the present invention;

Fig 3 is an exploded view of yet further alternate embodiment of the present invention;

Fig 4 is an exploded view of yet further alternate embodiment of the present invention;

Fig 5 is a perspective view of a yet further alternate embodiment of the present invention; and

Fig 6 is a perspective view of yet further alternate embodiment of the present invention.

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In Fig 1 there is provided a step apparatus 10 adapted to engage a vehicle towing hitch mount 11 which comprises a metal box section having an end opening 12 and a transverse drilling 13 adapted to receive a locking pin 14.

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The step apparatus comprises a mounting portion 15 of complementary box section to the end opening 12 and corresponding pin apertures 16 adapted to register with the apertures 13 on insertion of the mounting portion 15 in the opening 12.

Welded to the mounting portion 15 is a metal step portion 17 having a non-slip textured surface 20.

In the embodiment illustrated in Fig 2, alternative step apparatus 21 comprises a mounting portion 22 having downwardly depending threaded stud 23 at the inner end thereof and welded 15 on step portion 24 at the outer end thereof. The step portion 24 is provided with a non-slip upper surface 25. The threaded stud 23 is adapted to engage the hitch ball aperture 26 of a conventional gooseneck 27, and secured in position thereon by virtue of securing nut 30.

In the embodiment illustrated in Fig 3, there is provided step apparatus 31 comprising an integral metal casting having an upper step portion 32 having non-slip surface 33, and integrally formed mounting socket portion 34. The socket portion 34 is adapted to pass over the hitch ball 35 as installed on a conventional gooseneck 36. The socket portion 34 has an upper domed inner surface 37 adapted to receive the spherical upper surface of the hitch ball 35 and a lower substantially cylindrical flange portion 40 adapted to bear on

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the gooseneck 36. The flange portion 40 is provided with a slot at 41 adapted to receive a locking yoke 42 and is further provided with a locking pin aperture 43 adapted to register with a corresponding locking pin aperture 44 provided through 5 one arm of the locking yoke 42.

In the embodiment illustrated in Fig 4, there is provided step apparatus 45 comprising a mounting portion 46 in the form of a metal plate and provided with a pattern of bolt holes 47 corresponding to the threaded hitch mounting holes 50 provided 10 on a vehicle bumper 51. A step portion 52 is welded to an upper edge of the mounting portion 46 and is provided with a non slip surface 53.

In the embodiment of Fig 5, there is provided step apparatus comprising a mounting plate 60 adapted to be 15 colocated with a pintle hook assembly 61 on a rear member 62 of a vehicle having a mounting pad 63 for the purpose. Threaded holes (not shown) enable the pintle hook assembly 61 and mounting plate 60 to be secured by bolts 64. The mounting plate 60 has an upper extension 65 extending above the mounting pad 63 and having formed thereon a pair of spaced lugs 66 adapted to mount a step assembly 67.

The step assembly 67 comprises a moulded plastic step member 70 secured by nut and bolt assembly 71 to a step member support 72 having a pair of spaced pivot lugs 73, the step assembly being pivotally mounted to the spaced lugs 66 by pivot pin 74. The spaced lugs 66 are configured having an upper bearing surface 75 whereby in use the underside of the step member support 72 may bear thereon to take at least part of the

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step loads. The dimensions and configuration of the spaced lugs 66, mounting plate 60 and step member support 72 are selected whereby the raising limit of the step assembly 67 is defined by the bearing of the rear edge of the step member support 72 on the upper edge of the upper extension 65.

In the embodiment of Fig 6, a variation on the embodiment of Fig 5 is provided with like numerals indicating like components. In this embodiment step apparatus is provided which is adapted to mount to a conventional gooseneck 80. A 10 generally L-shaped mounting member 81 has a lower flange 82 adapted to secured by a hitch ball 83 and nut 84. An upright flange 85 of the mounting member 81 performs the function of the upper extension 65 of Fig 5.

The embodiments of Figs 5 and 6 are particularly suitable for providing a lockable arrangement whereby the step assembly 67 when locked in its deployed position serves to prevent the hitching or unhitching of a towed vehicle. For example, the lugs 73 may be configured to extend down along the inner surface of one or more of the support lugs 66, whereby a 20 drilling through adjacent lugs 73 and support lugs 66 may provide passage for a locking bolt or padlock which retains the step assembly 67 in its deployed position.

A vehicle hitched to the pintle hook 61 or hitch ball 83 respectively could not then be removed until the bolt or padlock is removed and the step assembly 67 moved to its stowed position. Similarly, a hitch could not be made unless the step assembly were unlocked and moved to its stowed position.

It will of course be realised that while the foregoing has

been given by way of illustrative example of this invention, all such and other modifications and variations thereto as would be apparent to persons skilled in the art are deemed to fall within the broad scope and ambit of this invention as defined in the claims appended hereto.

CLAIMS

- 1. Step apparatus including:
- a mounting portion adapted to engage a vehicle in the region of the towing hitch; and
 - a step portion supported on said mounting portion.
- Step apparatus according to Claim 1, wherein said mounting portion is secured to the vehicle by the hitch assembly or a portion thereof.
- Step apparatus according to Claim 2, wherein said mounting means is secured to the vehicle in lieu of a portion of the hitch assembly.
- 4. Step apparatus according to Claim 3, wherein said mounting portion comprises a body member having a threaded stud adapted to engage the hitch ball aperture in a conventional gooseneck.
- Step apparatus according to Claim 2, wherein said mounting means includes a body member adapted to engage the hitch ball of the towing hitch.
- Step apparatus according to Claim 3, wherein said mounting means includes a body member adapted to engage the tubular socket of a Hayman Reece towing hitch.
- 7. Step apparatus according to Claim 2, wherein said mounting

means is secured to the vehicle or hitch assembly whereby the step portion renders the hitch assembly inoperable.

- 8. Step apparatus according to Claim 7, wherein said step portion is selectively secured to said mounting portion, whereby in use the step portion prevents attachment or detachment of a hitched towable vehicle.
- 9. Step apparatus according to Claim 2, wherein said step portion is mounted to the mounting portion in a manner permitting the step to be moved from an in-use position to a stowed position.
- 10. Step apparatus according to Claim 9, wherein said step portion is hinged to the mounting portion whereby the step portion may be moved from an in use position where the step is disposed above the vehicle hitch to a stowed position whereby the hitch may be undone.

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CLAIMS

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- 1. Step apparatus including:
 - a mounting portion adapted to engage a vehicle in the region of the towing
- 5 hitch assembly and be secured to the vehicle by the hitch assembly or a portion thereof in lieu of a portion of the hitch assembly; and
 - a step portion supported on said mounting portion.
 - 2. Step apparatus according to Claim 1, wherein said mounting portion comprises a body member having a threaded stud adapted to engage the hitch ball aperture in a conventional gooseneck.
 - 3. Step apparatus according to Claim 1, wherein said mounting portion includes a body member adapted to engage the tubular socket of a Hayman Reece towing hitch.
 - 4. Step apparatus according to Claim 1, wherein said step portion is mounted to the mounting portion in a manner permitting the step to be moved from an in-use position to a stowed position.

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Step apparatus according to Claim 4, wherein said step portion is hinged to the mounting portion whereby the step portion may be moved from an in use position where the step is disposed above the vehicle hitch to a stowed position whereby the hitch may be undone.

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- 6. Step apparatus including:
- a body member having a recess adapted to pass over the hitch ball of a towing hitch;
 - a step portion supported on said body member;
- 5 support means whereby the body member bears in use on towing hitch apart from said hitch ball; and

interengagement means adapted to secure said body member on said hitch ball.

- To Step apparatus according to Claim 6, wherein said towing hitch comprises a gooseneck type and wherein said support means comprises a lower end of said body member adapted to bear on said gooseneck.
- Step apparatus according to any one of Claims 6 and 7, wherein said
 interengagement means comprises a yoke member adapted to engage the hitch ball
 stem via a slot provided in said body member.
 - 9. Step apparatus according to any one of Claims 6 and 7, wherein said interengagement means comprises a pair of spaced extensions of said body member extending below said towing hitch and adapted to receive a locking pin passing below said towing hitch.
 - 10. Step apparatus according to any one of claims 6 to 9, wherein said interengagement means is selected whereby said body member may be installed and removed from said towing hitch without tools.

- 11. Step apparatus according to Claim 6, wherein said step portion renders the hitch assembly inoperable.
- 5 12. Step apparatus according to Claim 11, wherein in use the step portion prevents attachment or detachment of a hitched towable vehicle.
 - 13. Step apparatus according to Claim 6, wherein said step portion is mounted in a manner permitting the step to be moved from an in-use position to a stowed position.
 - 14. Step apparatus including:

a mounting portion adapted to be secured to a vehicle by bolting up between the towing hitch and a bolt-up type hitch mounting; and

a step portion supported on said mounting portion.

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- 15. Step apparatus according to Claim 14, wherein said mounting portion transmits step loads in use to the designated load bearing portion of the hitch mounting.
- 20 16. Step apparatus according to Claim 14, wherein said mounting means is secured to the vehicle or hitch assembly whereby in use the step portion renders the hitch assembly inoperable.

- 17. Step apparatus according to Claim 16, wherein said step portion is selectively secured to said mounting portion, whereby in use the step portion prevents attachment or detachment of a hitched towable vehicle.
- 5 18. Step apparatus according to Claim 14, wherein said step portion is mounted to the mounting portion in a manner permitting the step to be moved from an in-use position to a stowed position.
 - 19. Step apparatus according to Claim 15, wherein said step portion is hinged to the mounting portion whereby the step portion may be moved from an in use position where the step is disposed above the vehicle hitch to a stowed position whereby the hitch may be undone.
- 20. Step apparatus according to Claim 14, wherein said towing hitch15 is selected from a pintle hook hitch and a ball hitch.
 - 21. Step apparatus according to any one of Claims 14 to 20, wherein said step portion is located in use above the towing hitch.
- 20 22. Step apparatus according to Claim 21, wherein said step portion is formed integrally with said mounting portion, and wherein said step portion is in use sufficiently high above the towing hitch to permit use of the towing hitch.
 - 23. Step apparatus according to Claim 21, wherein said step portion is removable from said mounting portion.

- 24. Step apparatus according to Claim 21, wherein said step portion and mounting portion form an assembly wherein said step portion may be moved from a deployed position over the towing hitch to a stowed position forward of the towing hitch.
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- 25. Step apparatus according to Claim 24, wherein said step portion is securable in one or more of its deployed or stowed position.
- 26. Step apparatus according to Claim 25, wherein said step portion is securable over said towing hitch whereby the hitch cannot be engaged with a trailer or the like.
- 27. Step apparatus according to Claim 26, wherein said step portion is securable over said towing hitch, and wherein a trailer or the like hitched therebeneath cannot be decoupled.

- 28. Step apparatus according to any one of Claims 23 to 27, wherein said step portion is hinged to said mounting portion in use.
- 29. Step apparatus including:
- a mounting portion adapted to be secured to a vehicle by the gooseneck for a ball hitch and wherein said mounting portion is secured to the gooseneck by the hitching ball; and
 - a step portion supported on said mounting portion.

- Step apparatus according to Claim 29, wherein said step portion is located in use above the towing hitch.
- 31. Step apparatus according to Claim 30, wherein said step portion is selectively
 5 secured to said mounting portion, whereby in use the step portion prevents
 attachment or detachment of a hitched towable vehicle.
 - 32. Step apparatus according to Claim 30, wherein said step portion is mounted to the mounting portion in a manner permitting the step to be moved from an in-use position to a stowed position.
 - 33. Step apparatus according to any one of the preceding claims, wherein said step portion has rounded corners to protect persons from impact injuries from said towing hitch.

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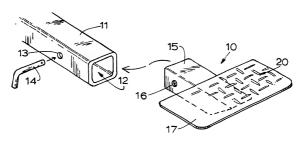
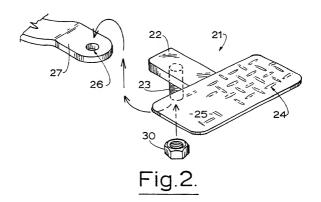
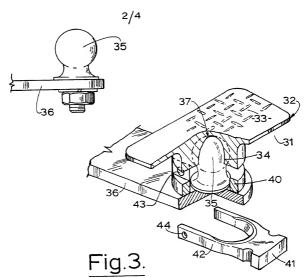
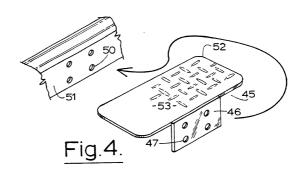


Fig.1.



SUBSTITUTE SHEET (RULE 26)





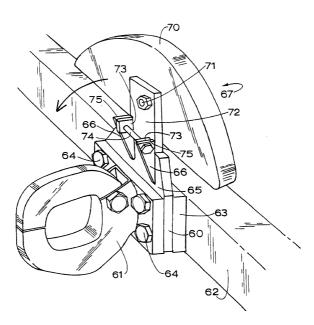


Fig.5.

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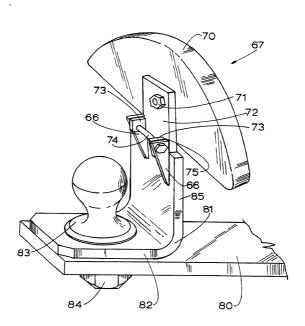


Fig.6.

Declaration, Power of Attorney and Petition

WE (I) the undersigned inventor(s), hereby declare(s) that:

My residence, post office address and citizenship are as stated below next to my name,

We (I) believe that we are (I am) the original, first, and joint (sole) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled

| the specifica | tion of which | | | |
|---------------|-----------------------------|------------------------------|-------------------|--|
| | is attached he | ereto. | | |
| | was filed on | | | |
| | | as Application Serial No. | | |
| | | and amended on | | |
| ** | was filed as I | CT international application | n | |
| | Number | PCT/AU98/00502 | | |
| | on | 30 June 1998 | | |
| | and was amen and Art. 34 | ded under PCT Art. 19 on | 23 SEPTEMBER 1998 | |
| | on | 11 JUNE 1999 | (if applicable). | |

We (1) hereby state that we (I) have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We (I) acknowledge the duty to disclose information known to be material to the patentability of this application as defined in Section 1.56 of Title 37 Code of Federal Regulations.

We (I) hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed. Prior Foreign Application(s)

| Application No. | Country | Day/Month/Year | 1 | riority | Clair | ned |
|-----------------|-----------|----------------|-----|---------|-------|-----|
| PO7619 | AUSTRALIA | 30 JUNE 1997 | . = | Yes | | No |
| | | *** | | Yes | | No |
| 7 | | | | Yes | | No |
| | | | | Yes | | No |

| . We (I) hereby claim the benefit under Title 35, | United States Code, §119(e) of any United States |
|---|--|
| provisional application(s) listed below. | · · |

| · A | |
|----------------------|---------------|
| (Application Number) | (Filing Date) |
| (Application Number) | (Filing Date) |

We (I) hereby claim the benefit under 35 U.S.C. §120 of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56 which became available between the fling date of the prior application and the national or PCT International filing date of this application.

| Application Serial No. | Filing Date | Status (pending, patented, abandoned) |
|------------------------|-------------|---------------------------------------|
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| | | |

And we (I) hereby appoint Steven B. Kelber, Reg. No. 30,073; Marc R. Labgold, Ph.D., Reg. No. 34,551; Song K. Jung, Reg. No. 52,5210; Sharon E. Crane, Ph.D., Reg. No. 36,113; Laura A. Donnelly, Reg. No. 38,451; Catherine Bax Richardson, Reg. No. 39,007; Kenmeth D. Springer, Reg. No. 39,434; Russell Q. Faige, Reg. No. 40,758; Iames M. Heintz, Reg. No. 41,828; Laura D. Nammo, Reg. No. 42,024 and Amy L. Miller, Keg. No. 43,804 and as our (my) attorneys, with full powers of substitution and revocation to proscoute this application and to transact all business in the Patent Office connected therewith; and we (I) hereby request that all correspondence regarding this application be sent to Steven B. Kelber of Long Aldridge & Norman LLP, Attorneys At Law, 6th Floor, 701 Pennsylvania Avenue, N.W., Washington, D.C. 20004.

We (I) declare that all statements made herein of our (my) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jecoardize the validity of the application or any patent issuing thereon.

| Stephen James DAVIS | Residence: 1468 Wynnum Road, Tingalpa, |
|-----------------------------|--|
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| _ | AUX |
| x 80 | Citizen of: AUSTRALIA |
| Signature of Inventor | Post Office Address: Same As Above |
| x 4-1-00 | |
| Date | |